Decennial

1.0 Decennial Program Area Overview

The Decennial Census will meet the constitutionally-mandated requirement to count U.S. residents by:

- **collecting, reviewing, processing and tabulating data for the nation's 118 million+ households;**
- **delivering to the President the state-level counts needed to determine the seats in the House of Representatives; and**
- **delivering small geographic area tabulations to each state for individual state plans.**

The Decennial Census is the most massive United States data collection and processing effort undertaken with an absolute deadline requirement. It is the largest peacetime undertaking of our federal government. In concept, the census is simple: count everyone in the country at a given point in time. The U.S. Census Bureau does this by using the housing unit as the basic control unit; most people live in housing units and most housing units have a mailing address that uniquely identifies them. For those people living in places other than housing units, Census 2000 will implement special counting procedures to ensure that everyone is counted.

We will carry out Census 2000 in the 50 states, the District of Columbia, the Commonwealth of Puerto Rico, the United States Virgin Islands, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands. Census 2000 will use the same basic methodologies and procedures for all 56 entities, except where specifically noted.

Census 2000 will follow a traditional Census plan. Some innovative ideas incorporated into Census 2000 include governmental partnerships, outreach and effective use of technology. Due to a Supreme Court ruling, the U.S. Census Bureau cannot use statistical methods to determine Congressional Apportionments; therefore, we will conduct a 100 percent follow-up, the Non-Response Follow-Up operation, for those housing units that did not initially respond. Because we cannot use sampling, we will make more personal visits in the field, process more forms in the Data Capture Centers, and keep them open longer to process the increased workload.

Our plans for Census 2000 will improve the efficiency of many census processing areas and procedures. By contracting out functions such as the Data Capture Centers, the U.S. Census Bureau will avoid purchasing equipment that is not needed after Census 2000. Our operations will be more flexible and scalable, allowing us to handle the increased and changing requirements of conducting Census 2000. Lastly, by using new technologies such as imaging and the Internet, we will collect and disseminate information faster.

1.1 Decennial Program Area Products, Services, and Customers

Products and Services

The basic product of the Decennial Census is population and housing data collected and tabulated by age, gender, race, industry, occupation, place of birth, place of work, ethnicity, etc. This unedited information is only available to U.S. Census Bureau employees that are sworn to confidentiality by Title 13. Edited and summarized information is available to customers noted elsewhere in this Plan.

The Decennial program area also provides products to other U.S. Census Bureau divisions directly involved in Census 2000; these products include:

- **Census 2000 forms for respondents;**
- **images of response pages and ASCII data representations of the responses;**
- **lists of non-respondents who need to be followed-up;**
- **Management Information System reports on processing and using systems to manage cost, staffing, progress, and any other issues;**
- **the Decennial Master Address File, containing lists of addresses we will use during Census 2000;**
- **the 2000 Census Data Warehouse, containing summarized Census cost and progress information, accessed by an enterprise-wide system as well as the Census data itself at various processing stages;**
- **the Targeting DataBase, containing 1990 profile data for the Regional Census Centers and Local Census Offices to use in identifying previous low response areas so they may target these areas for outreach programs and recruiting personnel with special language skills; and**
- **Coverage Edit Information, a list of respondents to be followed up on and the data we need from them.**

Services include:

- **Telephone Questionnaire Assistance to help the public fill out forms;**
- **Internet Questionnaire Assistance for on-line help in filling out forms; and**
- **Computer-Assisted Telephone Interviewing to take census information over the phone.**

In the 1999 Operational IT Plan we included two bulleted items concerning the 2000 Census Planning Database; we have deleted these from this year's version because Census 2000 will not include targeted language mail-outs, which was the primary function of that database.

To effectively manage and coordinate Census 2000 data collection, we have established additional census offices. During Census 2000, these offices will provide and use operational and management products such as the following:

- **Operations Control Management Reports, which provide ad-hoc query capability and produce maps, charts, and tables;**
- **Regional Census Center Authorization, which defines workloads, production rates, and staffing levels;**
- **Assignment Tracking, which creates and tracks assignments for collecting census information;**
- **Production Printing, which produces maps, listings, labels and directories;**
- **Group Quarters Control, which makes assignments, prints directories, updates Special Place/Group Quarters files; and**
- **the Pre-Appointment Management System/ Automated Decennial Administrative Management System, which provides personnel and payroll information.**

1.2 Decennial Program Area IT Objectives

The Decennial program area will make maximum and efficient use of our IT resources to meet our objectives by:

- **developing systems that are scalable and highly flexible;**
- **developing processing systems that are hardware and operating system independent;**
- **ensuring all production systems and subsystems are Y2K compliant;**
- **using commercial off-the-shelf products that reduce the risk of custom coding; and**
- **using architecture that relies on segments (subsystems) that are developed and tested individually, as well as tested at the system level.**

2.0 Decennial Program Area IT Support

Our 1998 Dress Rehearsal findings have validated our Census 2000 design, so we have not changed it. The major systems in the Census 2000 architecture include:

Data Capture System 2000 (DCS 2000)

DCS 2000 captures Title 13 census data as ASCII text from completed respondent forms, using the latest imaging, Optical Character Recognition, and Optical Mark Recognition technologies. All output from DCS 2000 is in electronic form and include regularly scheduled file transmissions containing check-in data as well as ASCII respondent data.

Data Capture Services Contract (DCSC)

DCSC refers to the supporting infrastructure at three contracted-out Census 2000 Data Capture Centers. TRW Inc., the DCSC contractor, will perform the following services:

- **obtain and build out Data Capture Center space to U.S. Census Bureau and DCS 2000 specifications;**
- **provide the Data Capture Centers with all needed office equipment and supplies;**
- **recruit, hire, train, and manage a large temporary workforce to capture Census 2000 data;**
- **operate the DCS 2000 equipment; and**
- **manage the facilities.**

Automation Infrastructure for Temporary Offices

Automation Infrastructure for Temporary Offices provides equipment, software, and integration services and support for Regional Census Centers and Local Census Offices. Automation Infrastructure for Temporary Offices has two parts. The first covers the preliminary Census 2000 operations we conduct from the 12 Regional Census Centers. The second covers the field operations we conduct out of the temporary Local Census Offices; these offices recruit, train, and manage personnel to conduct household interviews.

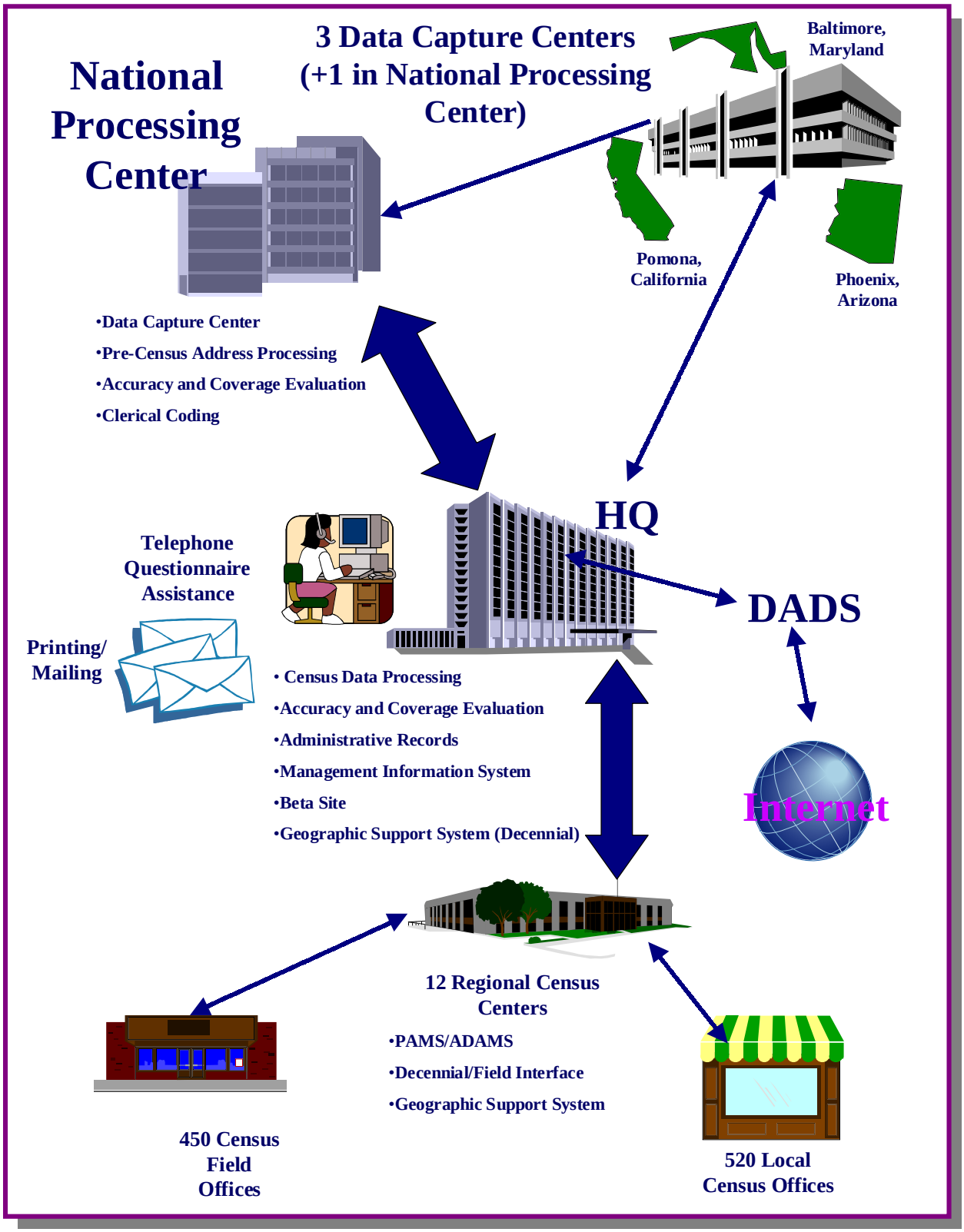

Figure 1: Census 2000 Architecture

2.1 Decennial Program Area IT System Descriptions

2.1.1 Data Collection

To accurately, efficiently, and cost-effectively count every household during Census 2000, we need a large, national-scale data collection infrastructure. To build this infrastructure, we will open many temporary offices across the country. The major components of this national field infrastructure are the:

- **12 Regional Census Centers;**
- **450 Census Field Offices; and**
- **520 Local Census Offices.**

Our system supports all field data collection activities for Census 2000. Our overall data collection objective is obtaining a questionnaire from every housing unit in the nation. To achieve this objective, we must complete a number of activities; our system's major activities are Early Census Field Operations and Census Field Operations.

Early Census Field Operations

Starting two years prior to Census Day, we begin creating and updating nationwide address lists so the U.S. Census Bureau can deliver census questionnaires. One of the major functions we perform during the Early Census Field Operations is address listing. Conducted primarily in rural areas, the Address Listing Capture Operation constructs a comprehensive list of approximately 22 million housing units and special places by having enumerators systematically canvas streets, trails, etc., located within each block in an assigned area. For each housing unit, the enumerator attempts to obtain the physical location address or description, the mailing address, and the household name, either from an occupant or another knowledgeable person. The enumerator assigns each housing unit to the census collection block where it is located, then updates the block maps with that housing unit's location.

We are conducting the Early Census Field Operations from the Census Field Offices, but we generate the actual assignments from within the Regional Census Centers. Since there is no automation in the Census Field Offices, we do all work requiring automation in the Regional Census Centers. Hence, the Census Field Offices will only support the following functions:

- **creating address listing or address list enhancement for city-style address areas;**
- **conducting local recruiting; and**
- **conducting clerical review of completed field work.**

Census Field Operations

The primary goal of Census Field Operations is ensuring that we will obtain a completed questionnaire from every housing unit. We will make this goal by first making certain that a questionnaire has been delivered to every unit. This is accomplished by the following two methods:

A key component of the Decennial Field Interface is the Operations Control System (OCS 2000) we are developing expressly to control field collection. OCS 2000 will capture and provide up-to-date data needed for effectively managing the Regional Census Centers, Census Field Offices, and Local Census Offices. Some of the specific functions of OCS 2000 include the following:

- **maintaining information on assignment progress;**
- **producing maps, listings, labels, and directories;**
- **Group Quarters Control. OCS 2000 extracts Special Place/Group Quarters assignments, prints appropriate directories and listings, controls records, updates the Master File, and controls the check-in and check-out of work through the appropriate phases;**
- **Housing Unit Control and Enumerations Operations. OCS 2000 accesses files with listings, directories and labels needed, as well as tracks the universes and cases completed through check-in and check-out procedure for operations like Non-response Follow-Up and re-interview (Question & Answer operation), Update/ Enumerate and List/Enumerate;**
- **Be Counted program. OCS 2000 identifies targeted areas and distribution sites and maintains an inventory of forms, questionnaires and promotional materials; and**
- **management activities. OCS 2000 provides managers with functions not available to other staff. The specific functions currently include enabling operations, making changes to crew leader assignments, etc.**

Regional Census Centers

The Regional Census Centers consist of 12 stateside centers and an area office in Puerto Rico. We began opening these offices in November 1997 and we are scheduled to begin closing them in March 2001. The Regional Census Centers are large, temporary offices designed to provide regional coordination for Early Census Field Operations in the Census Field Offices as well as Census Field Operations in the Local Census Offices. The Regional Census Centers house high-end UNIX servers that store and process data for most of the data collection subsystems. The Regional Census Centers will coordinate and support activities for Early Field Operations by:

- **providing overall management of Census Field Operations;**
- **managing all address listings and address list enhancement for city-style address areas through a network of Census Field Offices;**
- **producing maps (this operation is detailed in the Geography section of this Operational IT Plan);**
- **conducting geographic activities such as geocoding and TIGER database updates (these operations are also detailed in the Geography section of this Operational IT Plan);**
- **conducting recruiting; and**
- **managing payroll and personnel administrative system.**

The Pre-Appointment Management System/Automated Decennial Administrative Management System (PAMS/ADAMS) is one of the eight principal components of the Decennial Field Interface infrastructure. It was designed as an automated, enterprise-wide system to support hiring and paying employees, processing personnel actions,

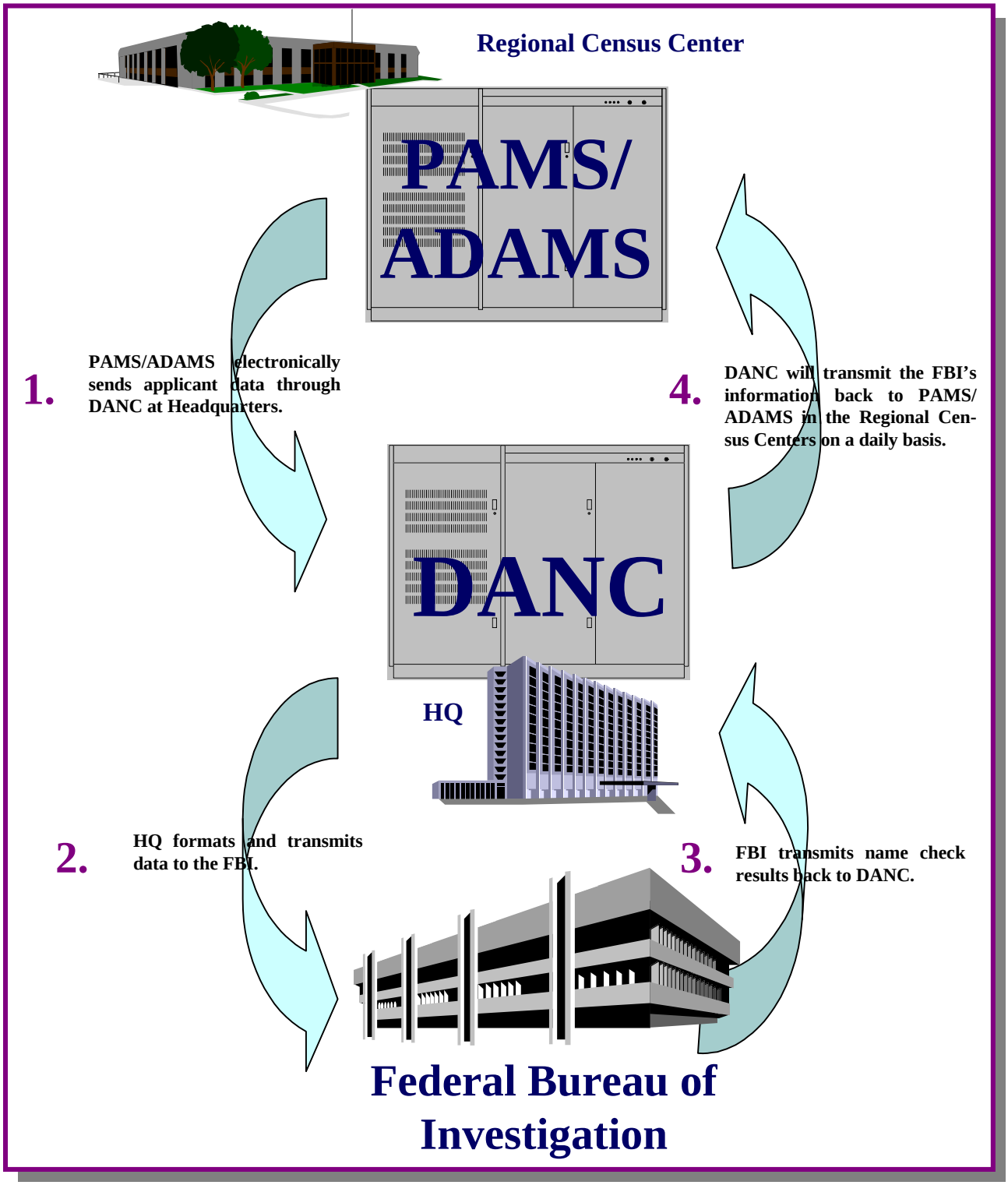

Figure 2: DANC Workflow

Local Census Offices

There will be approximately 520 Local Census Offices located in the 12 Regional Census Center areas and Puerto Rico. Each Local Census Office will report to a single Regional Census Center. We are opening Local Census Offices to only perform census field operations such as the following:

- **producing enumerator maps and assignments;**
- **conducting local recruitments;**
- **conducting outreach and promotions;**
- **conducting group quarters/special place/ service-based enumeration operations;**
- **coordinating military enumerations (if applicable);**
- **conducting update/leave operations;**

(continued)

- **conducting list/enumerate operations;**
- **conducting follow up enumeration; and**
- **managing field staff payroll and personnel administrative system.**

The configuration depicted in Figure 4, below, will fully support Local Census Office census field operations. Each Local Census Office will consist of a 802.3 10BaseT Local Area Network with a PC Windows NT or Novell server, PC-based desktop computers, and imaging workstations. For the Local Census Offices, we will develop applications that are batch-oriented (e.g., offline printing, data/image capture) and can access Oracle RDBMS and PeopleSoft Payroll/Personnel software located at a Regional Census Center. We will connect the Local Census Centers to the Regional Census Centers through a 64Kbps Frame Relay Link.

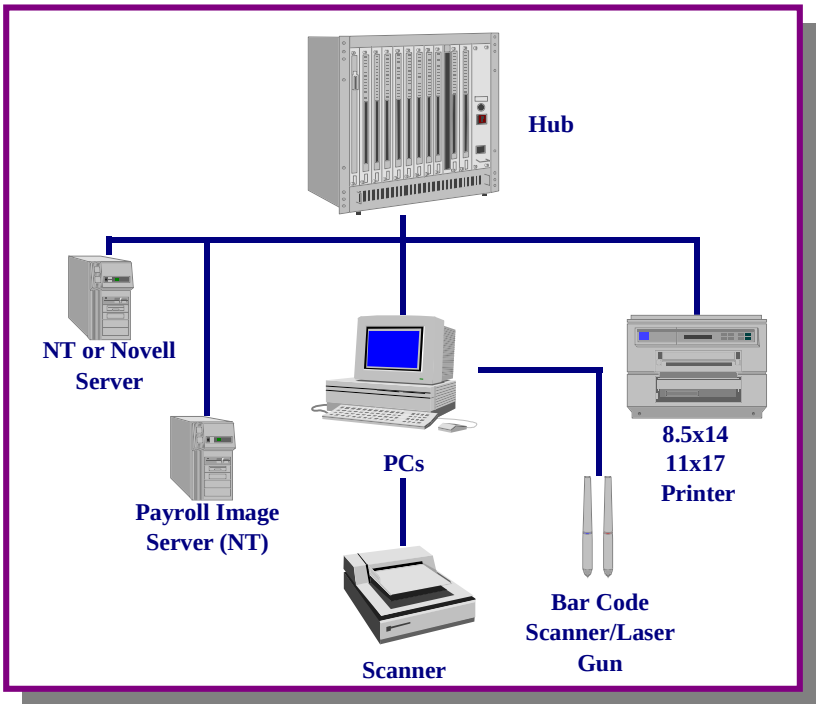

Figure 4: Local Census Office Configuration

Data Collection Milestones, FY 00

Description	Estimated		Actual		Progress to Date
	Start Date	Finish Date	Start Date	Finish Date	
Open Local Census Offices	07/99	10/99			
Release Initial Operations Control Systems 2000 software for pre-census operations (Census 2000)	11/99	12/99			
Resolve unmatched address clusters (MAFGOR) for Census 2000	01/95	01/00			In progress.
Release initial Decennial Field Interface Regional Census Center/PRAO/Local Census Office census operations	10/99	01/00			
Install Local Census Center hardware, software, and telecommunications systems	10/99	01/00			
Conduct Non-response Follow-up for Local Census Offices	04/00	07/00			
Conduct Non-response Follow up & quality assurance for Census 2000	04/00	07/00			
Conduct Non-response Follow-up for Regional Census Centers	04/00	07/00			
Begin Closing Regional Census Centers	09/00	09/00			

Data Collection Milestones, FY 01

Description	Estimated		Actual		Progress to Date
	Start Date	Finish Date	Start Date	Finish Date	
Close Early Local Census Offices and Local Census Offices	11/00	11/00			

Data Collection Milestones, FY 02-03

Description	Estimated		Actual		Progress to Date
	Start Date	Finish Date	Start Date	Finish Date	
No milestones to report					

2.1.5 Data Collection References

Data collection at the Regional Census Centers and Local Census Offices is supported by the following planning documents:

- **Budget Submission for 2001, dated June 1999;**
- ***Updated Summary: Census 2000 Operational Plan*, dated February 23, 1999;**
- **1999 Strategic IT Plan, dated December 18, 1998, pages 61-62, 93;**
- ***Local Census Office Installation and Integration*, Requirement Initiative DC02-9802, approved March 27, 1998;**
- ***Early Decennial Census Operations*, Requirement Initiative DC02-9702, approved October 3, 1997; and**
- ***Contractor System Integration Support*, Requirement Initiative DC02-9701, approved May 5, 1997.**

2.2.1 Data Capture

Decennial Census data capture is taking (by automatic or manual means) respondent information from completed census forms. We convert respondent answers and other control information on the census form to an electronic format suitable for computer processing. Data capture for Census 2000 will use the latest and best technology as well as allowing for more respondent-friendly questionnaires. Most importantly, for the first time, we have contracted out both of the major data capture process components. The two major data capture components are:

- **Data Capture System (DCS) 2000, which designs and develops the data capture system; and**
- **Data Capture Services Contract, which acquires, outfits, operates, and manages the Data Capture Centers that will house and support the DCS 2000 operational areas.**

We have contracted DCS 2000 to Lockheed Martin and the Data Capture Services Contract to TRW Inc. The Data Capture Centers will be located in:

- **Baltimore, MD;**
- **Jeffersonville, IN (National Processing Center);**
- **Pomona, CA; and**
- **Phoenix, AZ.**

Data Capture System (DCS) 2000

The primary goals of DCS 2000 are:

- **identifying respondents quickly so that we can conduct follow-up activities for non-respondents;**
- **deriving ASCII Title 13 data from the paper returns; and**
- **maintaining intermediate status data, such as metrics on work-in-process and productivity rates.**

The data capture process begins with the Data Capture Centers receiving and checking-in forms delivered by the U.S. Postal Service as well as forms delivered overnight from the Local Census Offices. The types of forms include those filled out by public respondents and U.S. Census Bureau enumerators, group quarter forms (from people in nursing homes, college dormitories, prisons, etc.), Be Counted forms, continuation forms, etc.

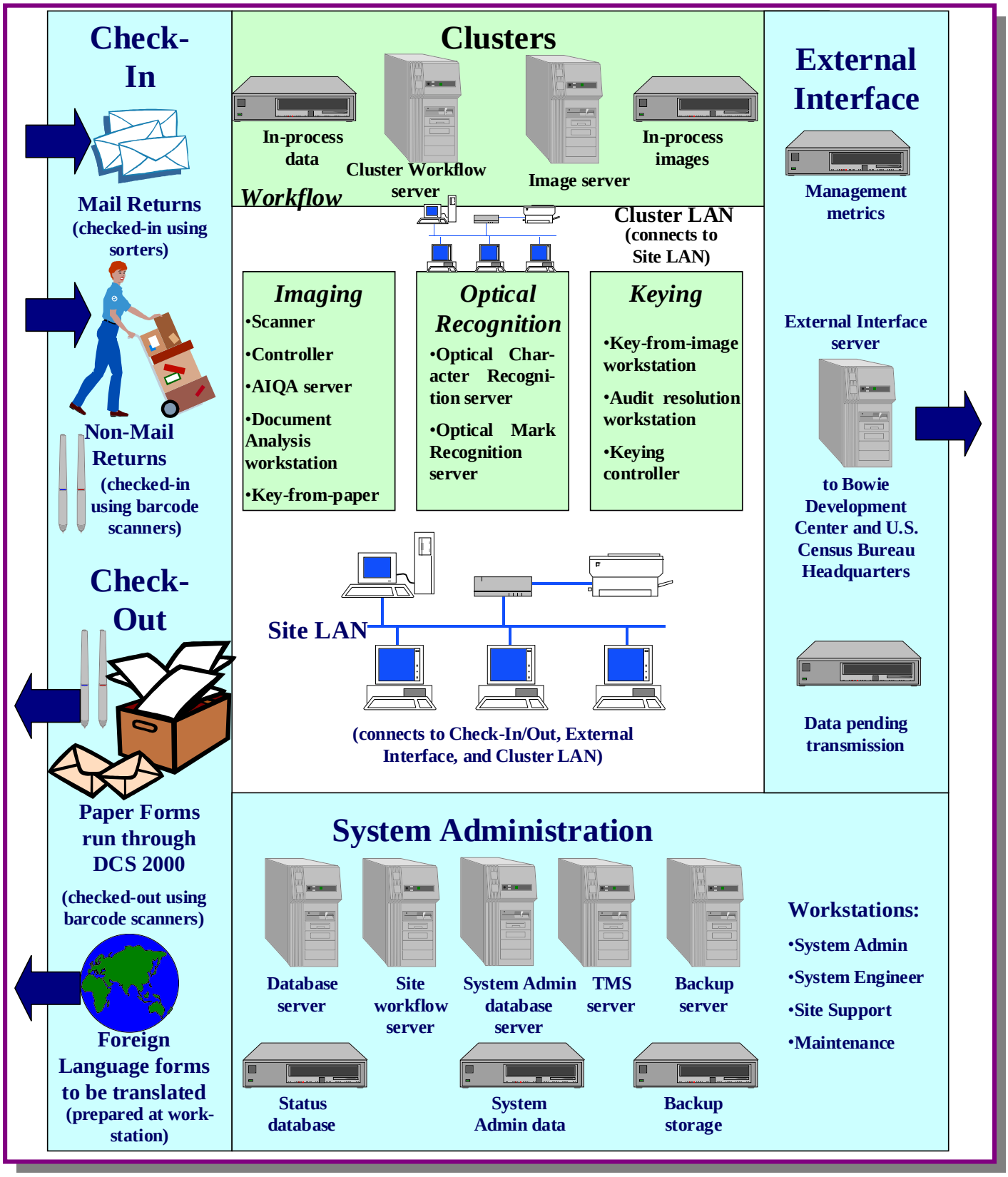

Figure 5: DCS 2000 System Architecture

Data Capture Services Contract

The Data Capture Services Contract (DCSC) will support DCS 2000. TRW Inc., the DCSC contractor, will provide three vendor-owned Data Capture Centers, staff, office equipment and supplies, training, and procedures to process Census 2000 questionnaires using the hardware and software provided by Lockheed Martin, the DCS 2000 contractor. The U.S. Census Bureau will manage the fourth Data Capture Center, located at the National Processing Center in Jeffersonville, IN. The Data Capture Centers will check-in mail returns, capture data, and manage the payroll and personnel administrative system.

2.2.2 Data Capture Progress Against Planned Milestones

Data Capture Milestones, FY 98

Description	Estimated		Actual		Progress to Date
	Start Date	Finish Date	Start Date	Finish Date	
Conduct Be Counted Form Data Capture (South Carolina)	05/98	06/98		06/98	Completed.

Data Capture Milestones, FY 99

Description	Estimated		Actual		Progress to Date
	Start Date	Finish Date	Start Date	Finish Date	
Open Data Capture Center #1 Baltimore, MD	04/99	04/99		04/99	Completed.
Open Data Capture Center #2 Jeffersonville, IN	06/99	06/99		06/99	Completed.
Open Data Capture Center #3 Pomona, CA	07/99	07/99			
Open Data Capture Center #4 Phoenix, AZ	09/99	09/99			

2.2.3 Data Capture Performance Measures

The Decennial program area has developed performance measures for activities that complete Census 2000. We are continuing our analysis to determine the targets for performance; status will not be available until after the census is completed. The following table lists the measures we have set based on various Census 2000 activity requirements.

Data Capture Performance Measures

Performance Goals	Performance Measures	Target Performance
Data Capture System 2000; Data Capture Services Contract	Optical Mark Recognition Accuracy Rate	To be determined following Phoenix Systems Acceptance Test (SAT) and Operational Test Dry Run (OTDR)
	Optical Character Recognition Accuracy Rate	To be determined following Phoenix SAT and OTDR
	Timeliness of deliverables	To be determined from Master Activity Schedule

2.2.4 Data Capture Risks

Adequate funding to support Census 2000 is a major risk. Major cutbacks have already kept us from completing some projects as originally planned.

Hiring Census 2000 support personnel is another area of high risk. The computer industry is currently experiencing an unprecedented shortage of technical people. This has driven the cost of technical staff beyond the reach of the government pay scale.

Census 2000 forms content and design changes are another risk. Final forms definition for DCS 2000 occurs late in the system cycle and in the 1998 amendment to the DCS 2000 Requirement Initiative we identified this as a significant potential risk. Should this risk occur, the effects would include the cost of hiring additional staff to define and test forms late in the cycle, the possibility of falling behind schedule due to system testing and integration requirements, and increased technical risk due to decreased available time for testing. We now believe the risk of Census 2000 forms content and design changes is unlikely to occur. The Data Capture Program Office has been very successful at mitigating this risk by working very closely with the forms design staff. They are directly involved in the forms design process and have provided imaging guidelines that designers have incorporated into their design efforts.

Print and paper quality is another risk. Print and paper quality has a direct effect on our two major forms design objectives: to encourage the respondent to completely and accurately fill out the form, and to allow the data capture system to completely and accurately record the respondent's information. To ensure that we meet our print and paper requirements, we have:

Worked closely with the Government Printing Office and others early in our development process to determine paper specifications that would meet DCS 2000's needs. In 1997, we formed a working group (which is still ongoing) with Lockheed Martin (the DCS 2000 prime contractor),

begins. Although DCS 2000 relies heavily on commercial off-the-shelf software products, integrating these products is not trivial. The U.S. Census Bureau and Lockheed Martin are using integrated product teams to develop, integrate, and test DCS 2000 software. We have also allocated additional funding for testing staffs to help mitigate this risk.

A final note about mitigating risk: the DCS 2000 contract employs an acquisition strategy that appropriately allocates risk between ourselves and Lockheed Martin by using a Cost Plus Award Fee contract with elements of firm-fixed prices. To further reduce risk, we used an incremental evolutionary model during the system development phase. Commercial off-the-shelf products have been purchased instead of using customized code. The systems architecture was designed to rely on subsystems that can be developed and tested individually as well as tested at the system level. Numerous prototype tests were carried out to minimize the risks of releasing the system into the production environment.

2.2.5 Data Capture References

Data Capture System 2000 and the Data Capture Services Contract are supported by the following planning documents:

- **Budget Submission for 2001, dated June 1999;**
- ***Updated Summary: Census 2000 Operational Plan*, dated February 23, 1999;**
- **1999 Strategic IT Plan, dated December 18, 1998, pages 61-62, 93;**
- **2nd Amendment to Requirement Initiative DC02-9601, approved March 31, 1999;**
- **Amendment to Requirement Initiative DC02-9601, approved September 23, 1998;**
- ***Contractor System Integration Support*, Requirement Initiative DC02-9701, approved May 20, 1997;**
- ***System Definition and Requirements*, Requirement Initiative SM01-9502, approved September 20, 1996;**
- ***Management Information System Cost and Progress System*, Requirement Initiative DC02-9602, approved September 6, 1996; and**
- ***Data Capture System 2000*, Requirement Initiative DC02-9601, approved August 1, 1996.**

National Processing Center's Data Processing Applications

The National Processing Center (NPC) will support Decennial Census data processing through 2001, using the following hardware and software:

- **Keying**
  Hardware: VAX Alphaservers configured with 600 VT320 (ASCII) terminals
  Software: Borland Delphi, C++, Turbo Pascal, and Viking
- **Clerical Coding**
  Hardware: 900 PCs
  Software: Windows NT
- **Map Spot Digitizing**
  Hardware: 160 Pentium workstations
  Software: Windows NT
- **Map Imaging**
  Hardware: six high-speed scanners
  Software: customized

The IT activities we perform at the National Processing Center are described below.

Address List Capture Operations (Pre-Census)

Two separate and distinct data capture types make up this pre-census data processing area; we describe these below.

Address List Capture: this is keying from the bound address registers or listing pages received from the data collection operation and local government officials. It includes check-in, document preparation, keying, quality assurance, and reporting subsystems. The workload for this operation is approximately 200 thousand address registers (bound books) with over 23 million addresses. This is a key-from-paper operation which uses low-end servers configured with VT320 (ASCII) terminals for data entry. We capture address lists on an upgraded VAX-based keying system also used for the Economic Census.

Address List Map Spot Digitizing: each address register includes a map that the data collection Census Field Office personnel have used to place map spot indicators for each housing unit. After we check-in the address register, we will scan the map; using the resulting image, we will digitize each map spot and send ASCII data to the Geography Division for processing. The 160 digitizing PC workstations are configured with TCP/IP software for network communications, image viewing, cleanup, and workflow software. We estimate that we will need approximately 600 temporary personnel to staff the Address List Capture Operations keying and digitizing areas, which began in early 1998.

Clerical Coding (Post-Census)

During the post-census coding operations, we will send any data records requiring clerical review from Headquarters to the National Processing Center for resolution. The major coding operations are described below.

Geographic Coding: this includes the Place of Birth, the Place of Work, and the Migration coding sub-processes. We will send The Place of Birth and the Place of Work ASCII string data to the Geography Division; they will match the data against the appropriate dictionaries and then against the TIGER database for geo-graphical coding. Geography will send any coding issues they cannot resolve back to the National Processing Center. We will match those data records against NPC's coding dictionary and the TIGER database for

to control data collection operations, including Update/Leave, List/Enumerate and Non-Response Follow-up.

Creation of Address File Tapes: a private contractor will print, address, and mail Census 2000 forms. Before they can do that, we must give them listings from the Decennial Master Address File. Included in the files will be information the contractor will need to place bar codes on the forms. These bar codes indicate the geographic area, census housing unit identification, form type, and other information we will need to prioritize forms once they arrive at the Data Capture Centers. We will also use this information to control data collection.

Census System Development Activities:

Decennial Response File: we will store all Census 2000 responses here. We will update the file with information from the Data Capture System 2000 and the Telephone Questionnaire Assistance System. We will also store results from mail responses, enumerator forms, and group quarters forms in this file.

Non-Response Follow-Up Identification: we will identify all non-responding housing units using housing unit notations in the Decennial Master Address File. We will use these non-responsive addresses to help form assignments, which we will feed to the Decennial Field Interface for Non-Response Follow Up.

Coverage Edit Follow Up Identification: we will provide telephone centers with household information so they can clarify discrepancies between the numbers reported vs. person data reported or so they obtain additional information for large households (i.e., those with more than six people).

Post Response Processing Systems

The Post Response Processing Systems are a series of post-data collection and post-data capture operations. These include operations that resolve inconsistencies, code write-in responses, edit data, impute for missing data, re-code for tabulation, avoid data disclosure, and prepare to load data into the Data Access and Dissemination System. The major applications are as follows:

Automated Coding: this is the process by which we assign census codes to the write-in responses filled in on the census forms. The automated portions of the census data coding occur at Headquarters. This Automated Coding process begins by creating a dictionary and reference files. Stored in a database, we will use the dictionary and these files match data later in the process. During the actual process, we convert electronic image (pixel) files into a standard ASCII data format and then send these converted ASCII files to the Headquarters Decennial Response File System for post-data capture processing. Here we will match the data against the dictionary. Finally, we will forward any coding issues this process could not resolve to the National Processing Center for computer-assisted/clerical coding.

General Coding: this assigns census codes for “other” race identification in addition to other household persons and relationships. A Headquarters application, General Coding operates within a client-server environment. Note that we must complete this operation before preparing the apportionment counts due to the President on December 31, 2000.

Data Processing Milestones, FY 99

Description	Estimated		Actual		Progress to Date
	Start Date	Finish Date	Start Date	Finish Date	
Implement merge of Place of Work Coding results (Dress Rehearsal)	12/98	01/99	01/99	02/99	Completed.
Revise Industry & Occupation classified structure (Census 2000)	05/98	04/99		04/99	Completed.
First Decennial Capture Centers opens in Baltimore, MD	04/99	04/99		04/99	Completed.
Implement Sample Edit & Imputation (Census Edited File for 100% data) (Dress Rehearsal--South Carolina)	01/99	05/99		05/99	Completed.
Implement Sample Edit & Imputation (Census Edited File for 100% data) (Dress Rehearsal--Sacramento and Menominee)	01/99	05/99		05/99	Completed.
Develop Migration auto geocoding software (Dress Rehearsal)	03/99	05/99		05/99	Completed.
Develop Place of Work auto geocoding software (Dress Rehearsal)	03/99	05/99		05/99	Completed.
Update Master Address File	06/99	07/99			In progress.
Prepare/Issue specifications for Check-in Data files (Census 2000)	02/99	09/99			In progress.
Receive specs for Geographic coding (all types) (Census 2000)	09/99	09/99			

Data Processing Milestones, FY 00

Description	Estimated		Actual		Progress to Date
	Start Date	Finish Date	Start Date	Finish Date	
Headquarters processing: provide first vendor file for questionnaire	08/99	10/99			
Prepare/Issue specs for Documentation Accountability Program group quarters check-in data files	08/99	10/99			
Prepare/issue specs for Short Form /Long Form check-in Data Files	02/99	12/99			In progress.
Update Decennial Master Address File with final DSF update (pre-Census Day)	12/99	12/99			
Develop/Test Decennial Response File creation software	09/99	02/00			
Implement automated Place of Birth geocoding	05/00	05/00			
Implement automated Migration geocoding	05/00	05/00			
Create Migration Coding Extract File	05/00	07/00			
Implement 100% Automated General Coding System (Census 2000)	04/00	07/00			
Implement automated General Coding system	04/00	07/00			
Implement geographic coding Extract System	05/00	07/00			

2.3.3 Data Processing Performance Measures

The Decennial program area has developed performance measures for activities that complete Census 2000. We are continuing our analysis to determine the targets for performance; status will not be available until after the census is completed. The following table lists the measures we have set based on various Census 2000 activity requirements.

Data Processing Performance Measures

Performance Goals	Performance Measures	Target Performance
Data Processing	Processing capacity used	To be determined on VMS system log after Systems Acceptance Test and Operational Test Dry Run
	Timeliness of deliverables	To be determined from Master Activity Schedule
	Trouble Report resolution	To be determined based on Remedy logs

2.3.4 Data Processing Risks

Adequate funding to support Census 2000 is a major risk. Major cutbacks have already kept us from completing some projects as originally planned.

Hiring Census 2000 support personnel is another area of high risk. The computer industry is currently experiencing an unprecedented shortage of technical people. This has driven the cost of technical staff beyond the reach of the government pay scale.

Rising equipment costs is another area of risk. From the planning stage to the actual implementation, equipment costs can escalate.

To reduce risks, we will use the Beta Site to test and assure the quality, completeness, and security of all IT systems prior to production or operational site deployment. We will perform initial site acceptance tests at the Beta Site for all data processing systems before we ship them to the field offices. To further reduce risk, the Automation Infrastructure for Temporary Offices will use commercial off-the-shelf software and services readily available in the private sector. In addition, the 1998 Dress Rehearsal tested the major components of the systems we will implement at Headquarters and the National Processing Center. Lastly, the U.S. Census Bureau has developed risk mitigation and contingency plans for data processing.

existed within the sample blocks on Census Day. We will use this list to begin conducting the Accuracy and Coverage Evaluation personal interviews.

Quality Check Person Interview: in this phase, the interviewers will collect information about the current residents and anyone who has moved out of the sample blocks between Census Day and the time of the interviews. The interviewers, using Computer-Assisted Personal Interviewing devices, will ask questions regarding alternate residences. This activity will establish where people lived on Census Day.

Accuracy and Coverage Evaluation Data Capture

In the data capture phase, every Accuracy and Coverage Evaluation enumerator will, each day, use a laptop computer to download data (by modem) to the field offices. The manual systems used in previous censuses, now automated through Computer-Assisted Personal Interviewing, will improve the timeliness and reliability of data as well as improving the monitoring of the overall operation.

Accuracy and Coverage Evaluation Data Processing

We will conduct all data processing operations for the Accuracy and Coverage Evaluation survey in Headquarters' Bowie Computer Center or in the National Processing Center. The computer matching capability the Accuracy and Coverage Evaluation system will provide is designed to use automation to streamline this operational phase.

We have divided Accuracy and Coverage Evaluation data processing into the following three phases.

Housing Unit Computer Matching: in this phase, we compare a housing unit listing taken during the Accuracy and Coverage Evaluation to a listing for the same blocks taken during the Census. The result is a new, comprehensive list of housing units from both sources that we will use for interviews.

Housing Unit Clerical Matching: in this phase, we will perform clerical matching at the National Processing Center using Matching Review and Coding System software supporting automated Accuracy and Coverage Evaluation clerical data retrieval and data entry functions. The three steps needed to complete the process are clerical matching, field follow-up to resolve discrepancies, and final clerical matching.

Person Matching: this "person matching" phase compares the people counted in the Accuracy and Coverage Evaluation survey to those counted in the actual census. After the computer matching, we will again perform clerical matching at the National Processing Center using the Matching Review and Coding System software. At this final step in the Accuracy and Coverage Evaluation data processing operation, the U.S. Census Bureau will estimate the number of people missed or duplicated in the Census 2000 enumeration. We will use these estimates to produce the PL 94-171 numbers to be delivered in March 2001.

We are currently proposing that we use an Image Retrieval System during the clerical matching operation. This would improve accuracy by allowing clerks to review DCS 2000-captured information while they match people listed by the Accuracy and Coverage Evaluation survey to people listed by the initial Census 2000 enumeration. This is an enhancement to the Dress Rehearsal System and currently is not in the budget.

2.4.3 Accuracy and Coverage Evaluation Performance Measures

The Decennial program area has developed performance measures for activities that complete Census 2000. We are continuing our analysis to determine the targets for performance; status will not be available until after the census is completed. The following table lists the measures we have set based on various Census 2000 activity requirements.

Accuracy and Coverage Evaluation Performance Measures

Performance Goals	Performance Measures	Target Performance
Accuracy and Coverage Evaluation	Percent of server capacity used	To be determined
	Data line transmission response times	To be determined
	Timeliness of data	To be determined
	Evaluation of enumerator training	To be determined
	Data consistency and accuracy	To be determined

2.4.4 Accuracy and Coverage Evaluation Risks

Adequate funding to support Census 2000 is a major risk. Major cutbacks have already kept us from completing some projects as originally planned.

Hiring Census 2000 support personnel is another area of high risk. The computer industry is currently experiencing an unprecedented shortage of technical people. This has driven the cost of technical staff beyond the reach of the government pay scale.

Rising equipment costs is another area of risk. From the planning stage to the actual implementation, equipment costs can escalate.

To reduce risks, we will use the Beta Site to test and assure the quality, completeness, and security of all Accuracy and Coverage Evaluation systems prior to production or their operational site deployment. We will perform initial site acceptance tests at the Beta Site for all Accuracy and Coverage Evaluation systems before we ship them to the field offices. To further reduce risk, the Automation Infrastructure for Temporary Offices will use commercial off-the-shelf software and services readily available in the private sector. In addition, the 1998 Dress Rehearsal tested the major components of the systems we will implement at Headquarters and the National Processing Center. Lastly, the U.S. Census Bureau has developed risk mitigation and contingency plans for Accuracy and Coverage Evaluation.

Calls to Telephone Questionnaire Assistance Operations		
Type of Call	**Estimated Number of Calls**	**Average Duration of Call in Minutes**
Informational	**4.4 to 5.3 million**	**4**
Forms Request	**2.7 to 3.3 million**	**4**
Short Form	**1.5 to 1.9 million**	**8**

The Telephone Questionnaire Assistance system will require a flat ASCII format for data output. EDS, the contractor, will maintain privacy and security in compliance with the provisions of Title 13, United States Code; the Bureau Administrative Manual; and with applicable sections of the Department of Commerce Handbook of Security Regulations and Procedures. We will have between 25 and 30 call centers to handle the expected Census 2000 workload. EDS will:

- **assemble as many call center firms as necessary to meet our requirements;**
- **develop and implement a universal operational design for all subcontractors;**

(continued)

- **design and implement a "seamless" telecommunications infrastructure;**
- **demonstrate, in advance of Census 2000 and by means of tests and simulations, that the call-center network fully meets U.S. Census Bureau requirements;**
- **develop contingency preparedness plans;**
- **manage and coordinate all preparations and functional operations of subcontractors;**
- **plan and implement a training program for subcontracted call center staffs at all levels;**
- **develop and implement a central mechanism for subcontractors to report problems and obtain resolutions;**
- **establish and operate a "command center," for monitoring the operations and status of participating call centers; and**
- **prepare, maintain, and provide current Management Information System reports.**

2.5.2 Telephone Questionnaire Assistance Progress Against Planned Milestones

Telephone Questionnaire Assistance Milestones, FY 98					
Description	**Estimated**		**Actual**		**Progress to Date**
	Start Date	**Finish Date**	**Start Date**	**Finish Date**	
No milestones to report					

2.5.3 Telephone Questionnaire Assistance Performance Measures

The Decennial program area has developed performance measures for activities that complete Census 2000. Targets for performance for Telephone Questionnaire Assistance are part of the contract; status will not be available until after the census is completed. The following table lists the measures we have set based on these Census 2000 activity requirements.

Telephone Questionnaire Assistance Performance Measures

Performance Goals	Performance Measures	Target Performance
Telephone Questionnaire Assistance	Percent of time agent is available and logged in per hour	90%
	Average length of time for reverse Computer-Assisted Telephone Interviewing session	Eight minutes for short form
	Average length of time for Large Household Follow-Up interview	Seven minutes for short form; 24 minutes for long form

2.5.4 Telephone Questionnaire Assistance Risks

Adequate funding to support Census 2000 is a major risk. Major cutbacks have already kept us from completing some projects as originally planned.

Voice and data communication services require certain lead times to engineer the circuits before installing them. Delays in office construction or in acquiring office space will affect service installation; this could also delay operations. The single nationwide toll free number for recruiting for all Regional Census Center and Local Census Office operations will require a complex and constantly changing routing scheme directing calls to the proper offices. We estimate that acquiring data and voice equipment currently will have a lead time ranging from two to six weeks from the award date. Delays or shortfalls in funding will set back installing and testing of local voice and data networks.

2.5.5 Telephone Questionnaire Assistance References

Telephone Questionnaire Assistance is supported by the following planning documents:

- **Budget Submission for 2001, dated June 1999;**
- ***Updated Summary: Census 2000 Operational Plan*, dated February 23, 1999;**
- **1999 Strategic IT Plan, dated December 18, 1998, pages 61-62, 93;**
- ***Contractor System Integration Support*, Requirement Initiative DC02-9701, approved May 9, 1997; and**
- ***System Definition and Requirements*, Requirement Initiative SM01-9502, approved September 20, 1996.**

we complete operations, we will move the data to near-line storage. Client (user) workstations use the SAS software system to mine information from this data warehouse.

The architecture for the Census 2000 Management Information System is depicted in Figure 6, below.

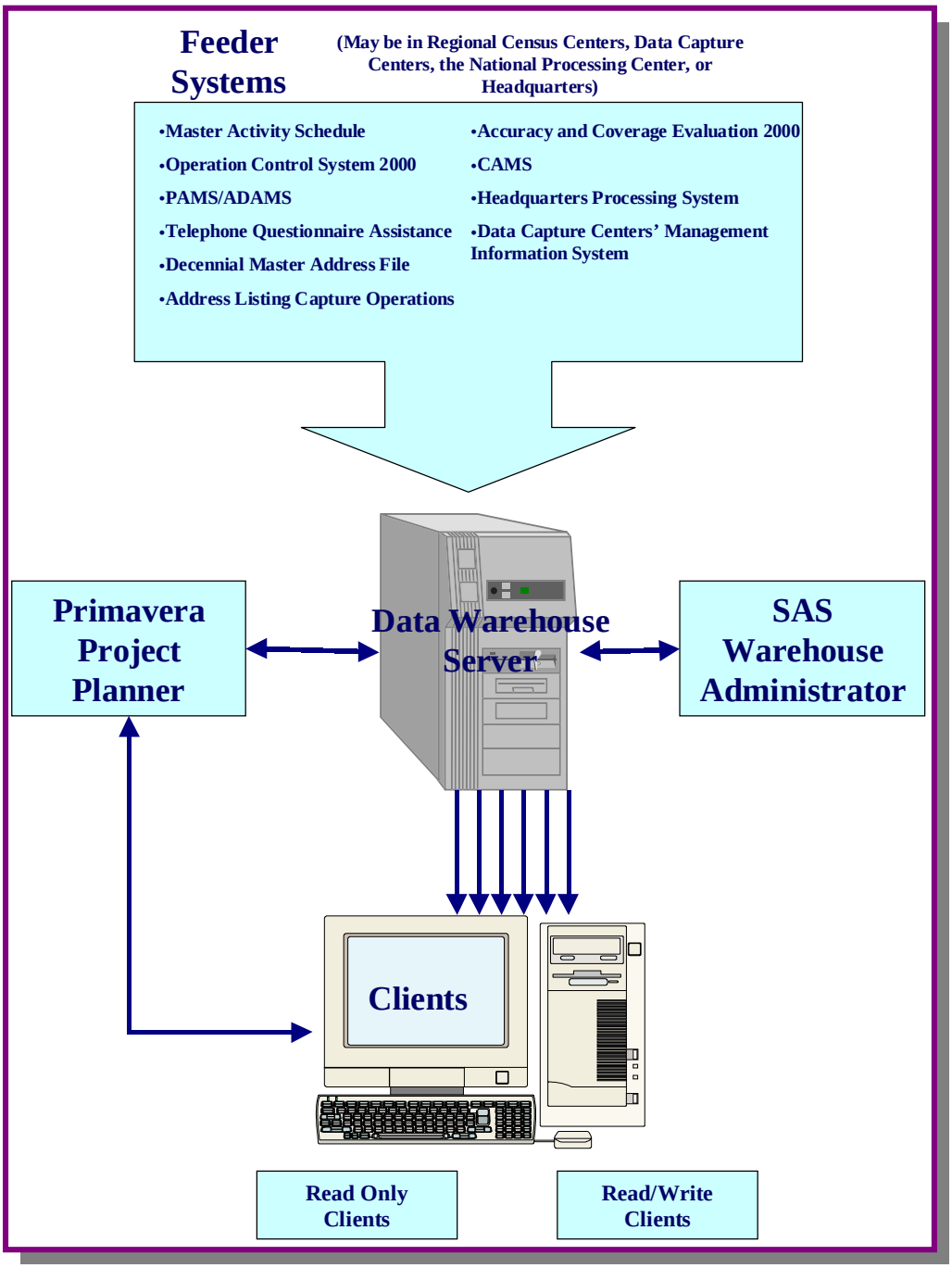

Figure 6: 2000 Census Management Information System Architecture

Operational IT Plan. The Beta Site provides space and contractor support used to operate the Beta Test Center, the Integration Center, and the National Support Center. At peak Beta Site operations in 2000, we will have approximately 30 contractor personnel providing coverage seven days a week, 24 hours a day.

2.6.2 Administrative Activities Progress Against Planned Milestones

Administrative Activities Milestones, FY 98

Description	Estimated		Actual		Progress to Date
	Start Date	Finish Date	Start Date	Finish Date	
Approve Purchase of PeopleSoft software	08/96	08/98		08/98	Completed.

Administrative Activities Milestones, FY 99

Description	Estimated		Actual		Progress to Date
	Start Date	Finish Date	Start Date	Finish Date	
Develop major system interface doc system	10/97	10/98		10/98	Completed.
Establish document archive system	05/98	10/98	06/98	10/98	Completed.
Commerce document archiving for Census 2000	11/98	11/98	02/99	02/99	Completed.
Install C&P system/train National Processing Center/Data Capture Centers	12/98	12/98	01/99	02/99	Completed.
Submit Data Capture Centers service orders	07/98	04/99		04/99	Completed.
Submit/obtain Local Census Offices service orders	07/99	09/99			

Administrative Activities Milestones, FY 00

Description	Estimated		Actual		Progress to Date
	Start Date	Finish Date	Start Date	Finish Date	
Implement interface doc for Census 2000	03/98	11/99			On schedule.
Implement data dictionary for Census 2000	03/98	01/00			On schedule.
Implement enterprise-wide Information system and Data Warehouse for Census 2000 Capture Operations	03/00	08/00			

Administrative Activities Milestones, FY 01-03

Description	Estimated		Actual		Progress to Date
	Start Date	Finish Date	Start Date	Finish Date	
No milestones to report					

2.6.5 Administrative Activities References

The 2000 Census Management Information System and the Beta Site are supported by the following planning documents:

- **Budget Submission for FY 2001, dated June 1999;**
- ***Updated Summary: Census 2000 Operational Plan*, dated February 23, 1999;**
- **1999 Strategic IT Plan, dated December 18, 1998, pages 61-62, 93;**
- ***Contractor System Integration Support*, Requirement Initiative DC02-9701, approved May 9,1997;**
- ***System Definition and Requirements*, Requirement Initiative SM01-9502, approved September 20, 1996; and**
- ***Management Information System Cost and Progress System*, Requirement Initiative DC02-9602, approved September 6, 1996.**

3.0 Decennial Program Area Infrastructure Description

3.1 Detailed Description of Decennial Program Area Infrastructure

The Decennial program area infrastructure consists of PCs and a Novell Local Area Network; these are primarily used for office automation activities and are an integral resource that supports Decennial's projects and programs.

The Decennial program area manages and supports its own PCs and LANs. This is a consolidated arrangement that provides improved services, inter-operability, and planning. Where possible, we use standardized PCs, software products, operating systems, and interface systems. Our infrastructure consists of the following:

- **700 PCs running Windows NT or Windows 95;**
- **43 HP LaserJet printers;**
- **23 Deskjet printers'**
- **six Novell Netware servers running Netware 4.11;**
- **four Novell Netware servers running Netware 4.10;**
- **one Novell Backup server running ArcServe 6.1;**
- **one DLT7000 Tape Changer.**